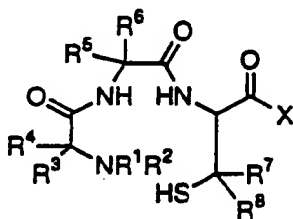


Amendments to the Claims:

1-3. (cancelled)

4. (currently amended) A reagent ~~according to claim 2, wherein~~ comprising a targeting moiety covalently linked via a bivalent linking group to a metal chelator in which the metal chelator has a and the bivalent linking group together have the formula:



wherein:

R<sup>1</sup> and R<sup>2</sup> are each independently H, lower alkyl, hydroxyalkyl (C<sub>2</sub>-C<sub>4</sub>), or alkoxyalkyl (C<sub>2</sub>-C<sub>4</sub>);

R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> are independently H, substituted or unsubstituted lower alkyl or phenyl not comprising a thiol group, and one of R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, and R<sup>6</sup> is ~~Z-L-(CR<sub>2</sub>)<sub>n</sub>-~~ ~~-L-(CR<sub>2</sub>)<sub>n</sub>-~~ where n is an integer from 1 to 6, and each R is independently H, lower alkyl, or substituted lower alkyl;

R<sup>7</sup> and R<sup>8</sup> are each independently H, lower alkyl, lower hydroxyalkyl or lower alkoxyalkyl;

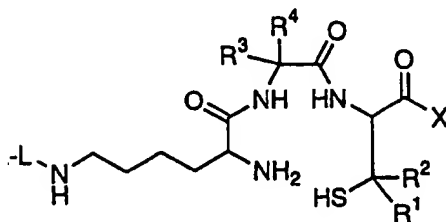
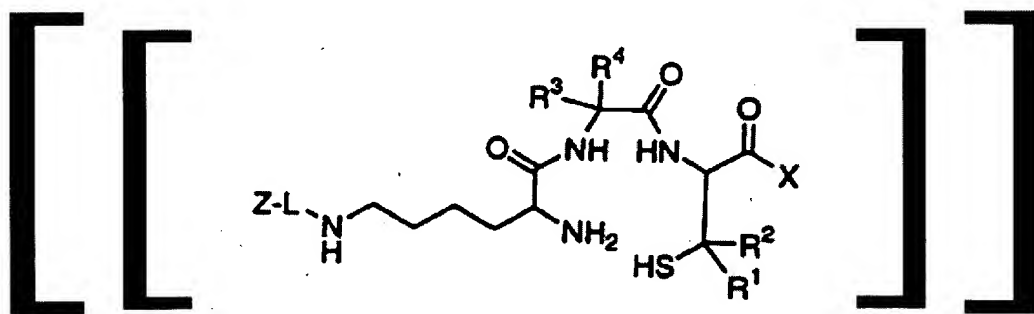
~~L is a bivalent linking moiety;~~

~~Z is a targeting moiety; and~~

X is -NH<sub>2</sub>, -NR<sup>1</sup>R<sup>2</sup>, or -NR<sup>1</sup>-Y, where Y is an amino acid, an amino acid amide, or a peptide of from 2 to about 20 amino acids; and

L is the bivalent linking group.

5. (currently amended) A reagent according to claim 4, wherein the metal chelator has and the bivalent linking group together have the formula:



wherein:

R<sup>1</sup> and R<sup>2</sup> are each independently H, lower alkyl, hydroxyalkyl (C<sub>2</sub>-C<sub>4</sub>) or alkoxyalkyl (C<sub>2</sub>-C<sub>4</sub>);

R<sup>3</sup> and R<sup>4</sup> are independently H, substituted or unsubstituted lower alkyl or phenyl not comprising a thiol group;

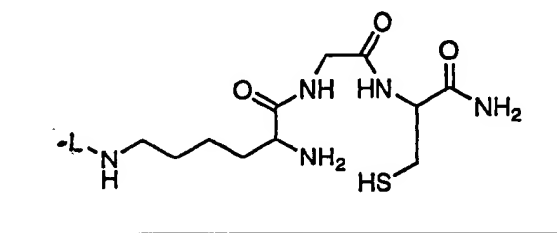
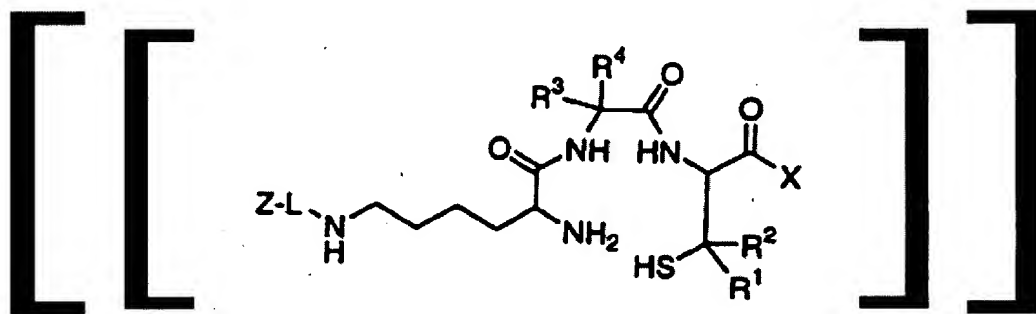
~~L is a bivalent linking moiety;~~

~~Z is a targeting moiety; and~~

X is -NH<sub>2</sub>, -NR<sup>1</sup>R<sup>2</sup>, or -NR<sup>1</sup>-Y, where Y is an amino acid, an amino acid amide, or a peptide of from 2 to about 20 amino acids; and

L is the bivalent linking group.

6. (currently amended) A reagent according to claim 5, wherein the metal chelator ~~has a~~ and the bivalent linking group together have the formula:



wherein:

L is ~~a linker~~ the bivalent linking group; and  
 Z is ~~a targeting moiety~~.

7. (cancelled)

8. (currently amended) A reagent according to claim 7 4, wherein the metal chelator is selected from the group consisting of (amino acid)<sup>1</sup>-(amino acid)<sup>2</sup>-cysteine- and (amino acid)<sup>1</sup>-(amino acid)<sup>2</sup>-penicillamine-  
wherein:

(amino acid)<sup>1</sup> does not comprise a thiol and is either ~~a~~ an  $\alpha,\omega$ - or a  $\beta,\omega$ -diamino acid having a free  $\alpha$ -amine or  $\beta$ -amine, and

(amino acid)<sup>2</sup> is a primary  $\alpha$ - or  $\beta$ -amino acid not comprising a thiol.

9-37. (cancelled)

38. (new) A reagent according to claim 8, wherein the metal chelator has a formula selected from the group consisting of:

-( $\epsilon$ -Lys)-Gly-Cys-,  
-( $\delta$ -Orn)-Gly-Cys-,  
-( $\gamma$ -Dab)-Gly-Cys- and  
-( $\beta$ -Dap)-Gly-Cys-.

39. (new) A reagent according to claim 4 wherein L comprises an amino acid or a peptide comprising from 2 to about 20 amino acids.

40. (new) A reagent according to claim 4 wherein the targeting moiety is a specific binding peptide comprising from 3 to about 45 amino acids.

41. (new) A reagent according to claim 40 selected from the group consisting of:

(DTPA).Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KT.Nal.T( $\epsilon$ -K)GCKK.amide

F<sub>D</sub>.Cpa.YW<sub>D</sub>K.Abu.Nal.T( $\epsilon$ -K)GC.amide

CH<sub>2</sub>CO.FFW<sub>D</sub>KTFC( $\epsilon$ -K)GC.amide

cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.( $\epsilon$ -K)GC.amide

acetyl.F<sub>D</sub>FYW<sub>D</sub>KTFT( $\epsilon$ -K)GC.amide

(DTPA).F<sub>D</sub>FYW<sub>D</sub>KTFT( $\epsilon$ -K)GC.amide

acetyl.F<sub>D</sub>FYW<sub>D</sub>KTFTGGG( $\epsilon$ -K)GC.amide

(DTPA).( $\epsilon$ -K)GCF<sub>D</sub>FYW<sub>D</sub>KTFT.amide

acetyl.F<sub>D</sub>FYW<sub>D</sub>KTFTGGG( $\epsilon$ -K)GC.amide

F<sub>D</sub>Cpa.YW<sub>D</sub>KTFTGGG(ε-K)GC.amide  
(DTPA).F<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GC.amide  
(DTPA).Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GC.amide  
(DTPA).Aca.F<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GC.amide  
*cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.*(CH<sub>2</sub>CO.K(ε-K)GC.amide)  
(DTPA).Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
*acetyl*.KKKKK.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GC.amide  
CH<sub>2</sub>CO.FFW<sub>D</sub>KTFCKKKKK(ε-K)GC.amide  
CH<sub>2</sub>CO.FFW<sub>D</sub>KTFC(ε-K)KKKKKGC.amide  
DDDD.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKKKK.amide  
Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
(2-ketogulonyl).F<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GC.amide  
KDKD.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKDKD.amide  
*acetyl*.KKKKK.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
*acetyl*.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
KKKK.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCDDDD.amide  
(2-ketogulonyl).Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
Trc.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
Hca.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
(Trc)<sub>2</sub>.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
K<sub>D</sub>KKK.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCDD.amide  
K<sub>D</sub>DKD.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKDKD.amide  
*cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.*(CH<sub>2</sub>CO.KKKKK(ε-K)GC.amide)  
F<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCR.amide  
(Trc-imide).Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCR.amide  
Trc.(Trc-imide).K.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCRR.amide  
(Trc-imide)<sub>2</sub>K.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCR.amide  
*cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.*(CH<sub>2</sub>CO.(ε-K)GCK.amide)  
(*acetyl*.TKPRGG)<sub>2</sub>K(ε-K)GC.amide  
*acetyl*-DDD.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide

K<sub>D</sub>KK.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCDDD.amide  
D<sub>D</sub>DF<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
*acetyl*.D<sub>D</sub>DF<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
K<sub>D</sub>KKKF<sub>D</sub>K.Cpa.YW<sub>D</sub>KTF,Nal.(ε-K)GCDDDD.amide  
D<sub>D</sub>F<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
*acetyl*.D<sub>D</sub>F<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
F<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
F<sub>D</sub>FYW<sub>D</sub>KTFT(ε-K)GCKK.amide  
CH<sub>2</sub>CO.Y<sub>D</sub>.Apc.GDCGGC<sub>Ac</sub>mGC<sub>Ac</sub>mGGC.amide)<sub>2</sub>(CH<sub>2</sub>CO)<sub>2</sub>K.(ε-K)GC.amide  
CH<sub>2</sub>CO.Y<sub>D</sub>.Apc.GDC)<sub>2</sub>K.(ε-K)GCG.amide  
K<sub>D</sub>.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCD.amide  
K<sub>D</sub>K.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCDD.amide  
{(CH<sub>2</sub>CO.Y<sub>D</sub>.Apc.GDCG)<sub>2</sub>KG}<sub>2</sub>.K(ε-K)GCG.amide  
{(CH<sub>2</sub>CO.Y<sub>D</sub>.Apc.GDCGGCG.amide)(CH<sub>2</sub>CO)}<sub>2</sub>.K(ε-K)GC.amide  
(CH<sub>2</sub>CO.Y<sub>D</sub>.Apc.GDCKKG)<sub>2</sub>K(ε-K)GC.β-Ala.amide  
({(CH<sub>2</sub>CO.Y<sub>D</sub>.Apc.GDCGGC<sub>Ac</sub>mGC<sub>Ac</sub>mGGC.amide)(CH<sub>2</sub>CO)})<sub>2</sub>.K)<sub>2</sub>K(ε-K)GCG.amide  
*cyclo*(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.K(ε-K)KCK.amide)  
*cyclo*(N-methyl)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.(β-Dap)KCR.amide)  
*cyclo*(N-methyl)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.(β-Dap)KCK.amide)  
*cyclo*(N-methyl)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.(δ-Dap)GCK.amide)  
*cyclo*(N-methyl)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.(β-Dap)GCK.amide)  
*cyclo*(N-methyl)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.(ε-K)KGKK.amide)  
*cyclo*(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO).K(ε-K)GC.amide)  
(DTPA).Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide  
(DTPA).Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KT.Nal.T(ε-K)GCKK.amide  
*cyclo*(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO).(ε-K)GC.amide  
KDKD.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKDKD.amide  
(2-ketogulonyl)F<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GC.amide  
*acetyl*.Nal<sub>D</sub>.Cpa.YW<sub>D</sub>KTFT(ε-K)GCKK.amide

$\{(\text{CH}_2\text{CO.Y}_D.\text{Apc.GDCGGC}_{\text{Acm}}\text{GC}_{\text{Acm}}\text{GGC.amide})_2(\text{CH}_2\text{CO})_2\text{K}\}_2.\text{K}(\epsilon\text{-K})\text{GCG.amide}$   
 $(\text{CH}_2\text{CO.Y}_D.\text{Apc.GDCKGCG.amide})_2(\text{CH}_2\text{CO})_2\text{K}(\epsilon\text{-K})\text{GC.amide}$   
 $(\text{CH}_2\text{CO.Y}_D.\text{Apc.GDCKGG})_2\text{K}(\epsilon\text{-K})\text{GC}.\beta\text{-Ala.amide}$   
 $\{(\text{CH}_2\text{CO.Y}_D.\text{Apc.GDCG})_2\text{KG}\}_2\text{K}(\epsilon\text{-K})\text{GCG.amide}$   
 $(\text{CH}_2\text{CO.Y}_D.\text{Apc.GDCGGC}_{\text{Acm}}\text{GC}_{\text{Acm}}\text{GGC.amide})_2(\text{CH}_2\text{CO})_2\text{K}(\epsilon\text{-K})\text{GC.amide}$   
*cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO).(ε-K)GCK.amide*  
*cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.GC.Dap.Dap.amide)*  
*cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.(β-Dap)KCR.amide)*  
*cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.(β-Dap)KCK.amide)*  
*cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.(γ-Dab)KCR.amide)*  
*cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.(δ-Orn)GCK.amide)*  
*cyclo(N-CH<sub>3</sub>)FYW<sub>D</sub>KV.Hcy.(CH<sub>2</sub>CO.(β-Dap)GCK.amide)*  
*acetyl.KKKKKK(ε-K)GCGGPLYKKIIKKLLES*  
 $(\text{CH}_2\text{CO.Y}_D.\text{Amp.GDC.KGCG.amide})_2(\text{CH}_2\text{CO})_2\text{K}(\epsilon\text{-K})\text{GC.amide}$   
and  
 $(\text{CH}_2\text{CO.Y}_D.\text{Amp.GDC.GGC}_{\text{Acm}}\text{GC}_{\text{Acm}}\text{GGC.amide})_2(\text{CH}_2\text{CO})_2\text{K}(\epsilon\text{-K})\text{GC.amide}.$